TERRA

MAY/JUNE 1996
VOLUME 33 ■ NUMBER 3

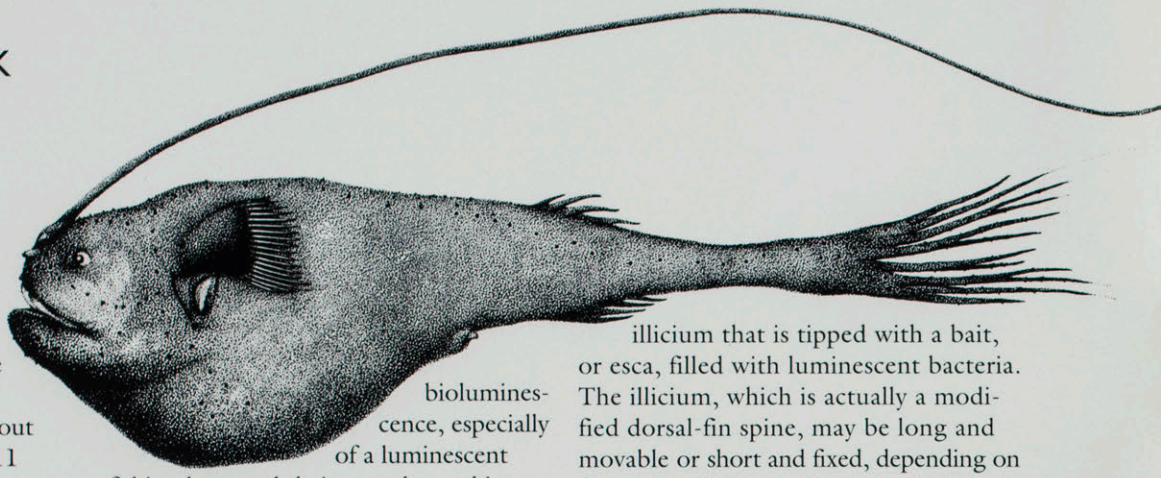
NATURAL HISTORY MUSEUM OF
LOS ANGELES COUNTY

CALENDAR OF EVENTS INSIDE!

Join us for:

- A tour of American bungalow-style homes
- A symposium on Ancient Egypt
- Adventures in Nature for children ages 3 to 13

FISHING IN THE DARK



NO GROUP OF FISHES better represents the popular image of life in the dark than do the deepsea anglerfishes, of which there are about 150 species currently assigned to 11 families within the superfamily Ceratioidea. Ceratioids are found in all oceans, from the subarctic to the subantarctic, but curiously have not been collected from the Mediterranean. They have evolved a life-history strategy of hatching as larvae in the upper, or pelagic, food-rich marine layers and then living as adults in the midwater, or mesopelagic, realm, from roughly 600 to 8,000 feet (200 to 2,500 meters).

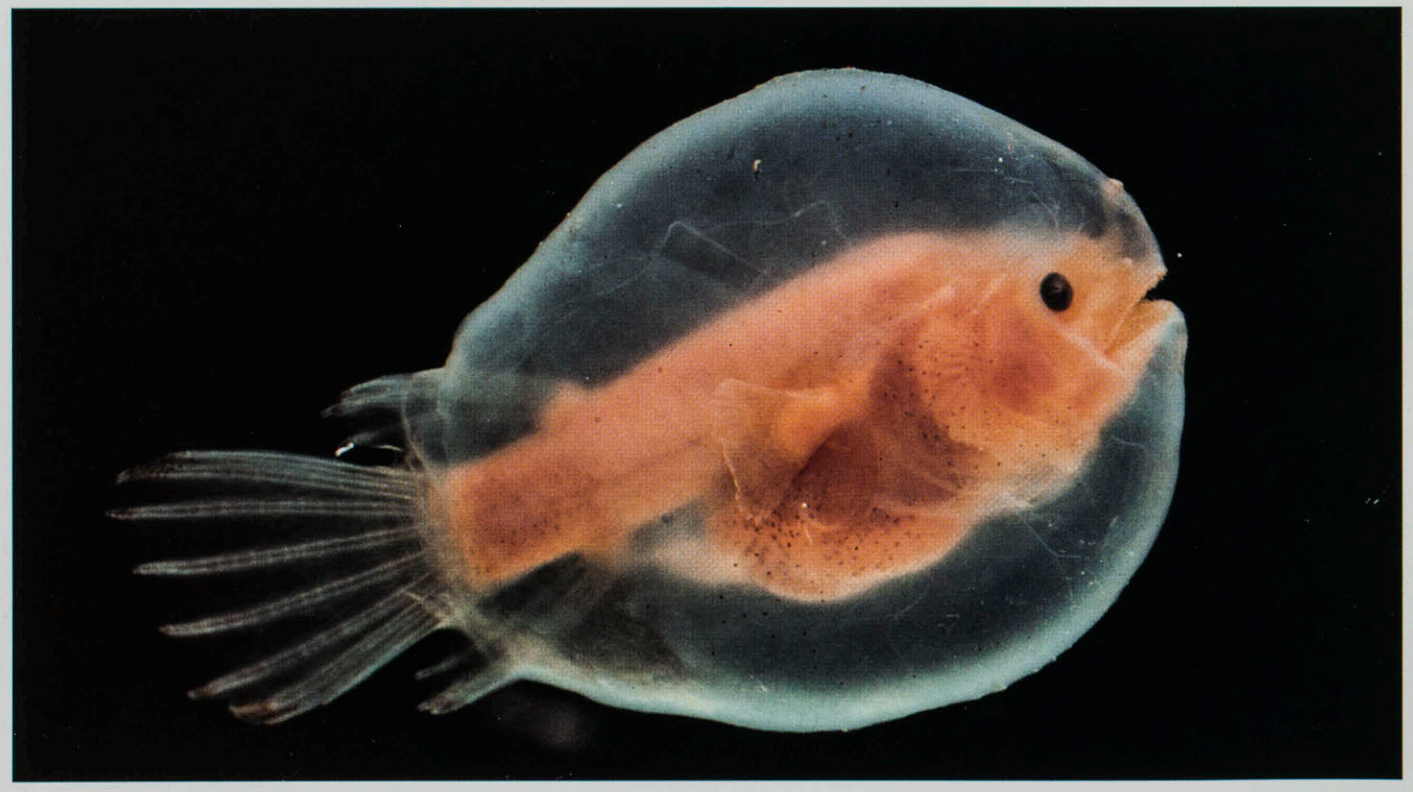
Although some may grow to almost 4 feet (1 meter) in length, ceratioids are generally small. Most females are less than 4 inches (10 centimeters) in length, and males are considerably smaller. Two major evolutionary adaptations have enabled these fishes to thrive in the energy-poor deepsea environments: their use of bioluminescence, especially of a luminescent fishing lure, and their complex and innovative reproductive strategies.

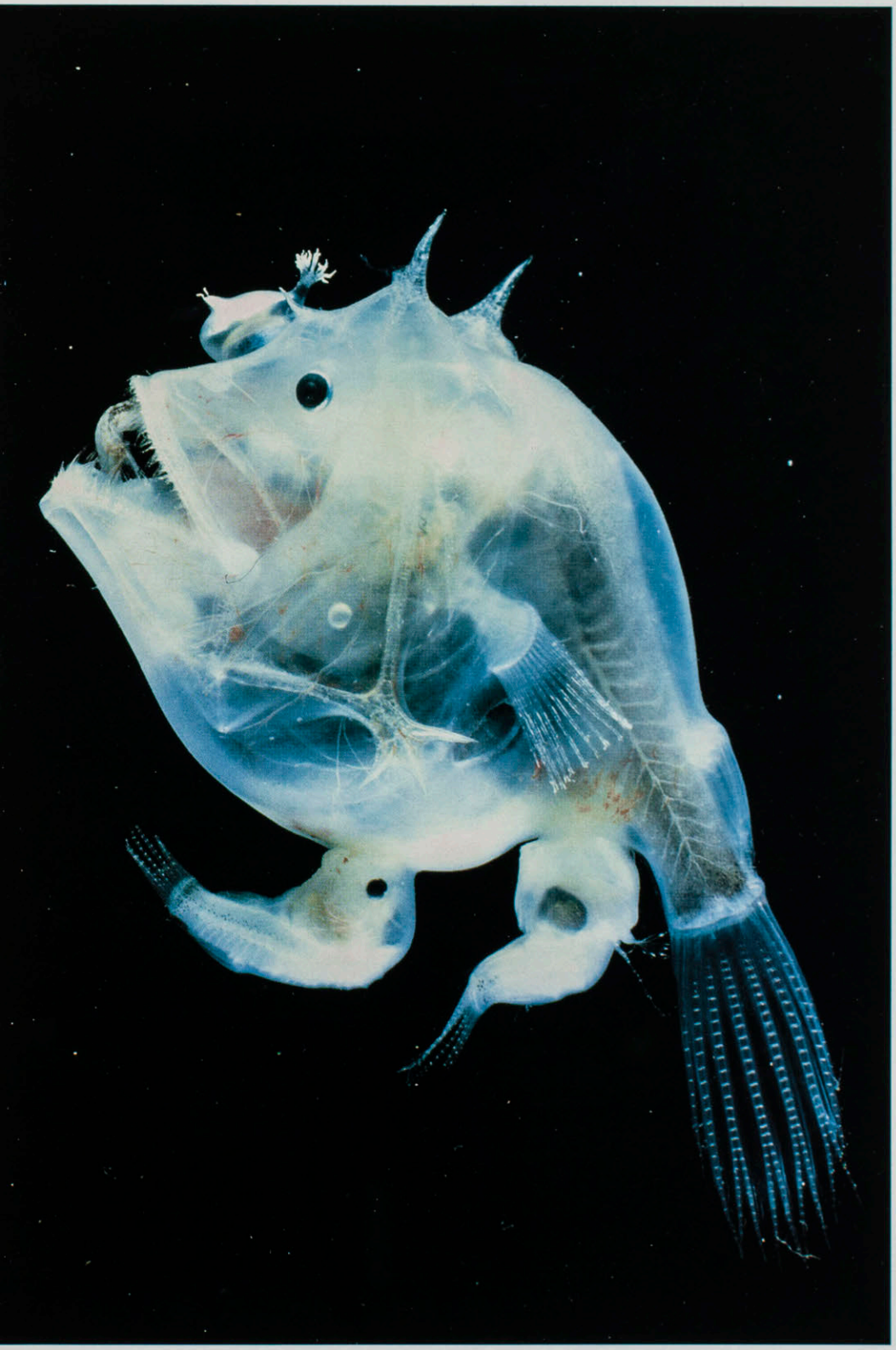
There is no ambient light at ocean depths of 3,300 feet (1,000 meters) or below, and meals may be few and far between; in these environs, an animal with the ability to attract its food has a distinct advantage. Most female anglerfishes have a head-mounted fishing pole called the illicium that is tipped with a bait, or esca, filled with luminescent bacteria. The illicium, which is actually a modified dorsal-fin spine, may be long and movable or short and fixed, depending on the species. The esca of each species is uniquely shaped and decorated; some are simple, bulb-like knobs, while others are complex arrangements of tubes and filaments that serve as living fiber-optics systems.

This family contains a larger number of bizarre forms than any other . . . [and] a large proportion have gradually found their way to the greatest depths of the ocean.

A.C.L.G. GUNTHER, 1880

By drifting or slowly swimming while using a glowing bait to entice potential meals, female ceratioids are successful in the dark and relatively unproductive ocean depths. However, such a lifestyle makes it hard to locate a mate, and this task has evolved for the most part to the males. Male ceratioids differ dramatically from the females; they are small (less than 10% the size of the female) and slender, and they lack jaw teeth and a fishing apparatus. Most have unusually large nasal openings, leading ichthyologists to think that they are able to track potential mates





LEFT

The Icelander B. Saemundsson, one of the first biologists to find specimens linked like the *Haplophryne mollis* shown here, assumed that the drawfs attached to the female's lower abdomen were juveniles. In his 1922 report, he puzzled over the fact that the small fishes were so degenerate in form and so firmly attached that their lips had fused with the skin of the female. Three years later, the British ichthyologist and museum curator C. Tate Regan resolved the issue by identifying the attached "juveniles" as sexually mature males. Photograph by Peter David/TCL/Masterfile

OPPOSITE, TOP

***Rhynchactis leptonema*. The females of this species are unlike those of almost all other ceratioids in that they lack an escal bulb. Scientists have speculated that this fish first attracts prey by vibrating its long illicium; then, perhaps using secretions from the mysterious glands that line the roof of its mouth, the anglerfish lures the unwitting victim the remaining distance from the illicium's tip to within reach of its jaws and the powerful teeth near the back of its throat. Illustration by K. Elsman.**

OPPOSITE, BOTTOM

Although adult ceratioid anglerfishes live in deep waters, the larvae develop near the surface, where food is plentiful. The naked skin of the larvae is puffed up with a clear gelatinous tissue, which surrounds the inner body like jelly. This translucent covering may act as a floating organ for the little fishes, which are not equipped with strongly developed fins for swimming. The amount of gelatinous tissue is greatly reduced as the fish metamorphose, and the resulting increase in their density may assist them in sinking into the depths in which they will spend their adult lives. Photograph by Norbert Wu.

COVER

The deepsea anglerfish *Linophryne polypogon*. The lower jaws of females of this and a few other anglerfish species have dangling barbels, which may be light organs. Photograph by Peter David/TCL/Masterfile

Fused males depend upon females for nutrition, but they supply in return that most precious of biological gifts—access to the next generation and a chance for evolutionary continuity.
STEPHEN JAY GOULD, 1982

by following chemical cues emitted by the females.

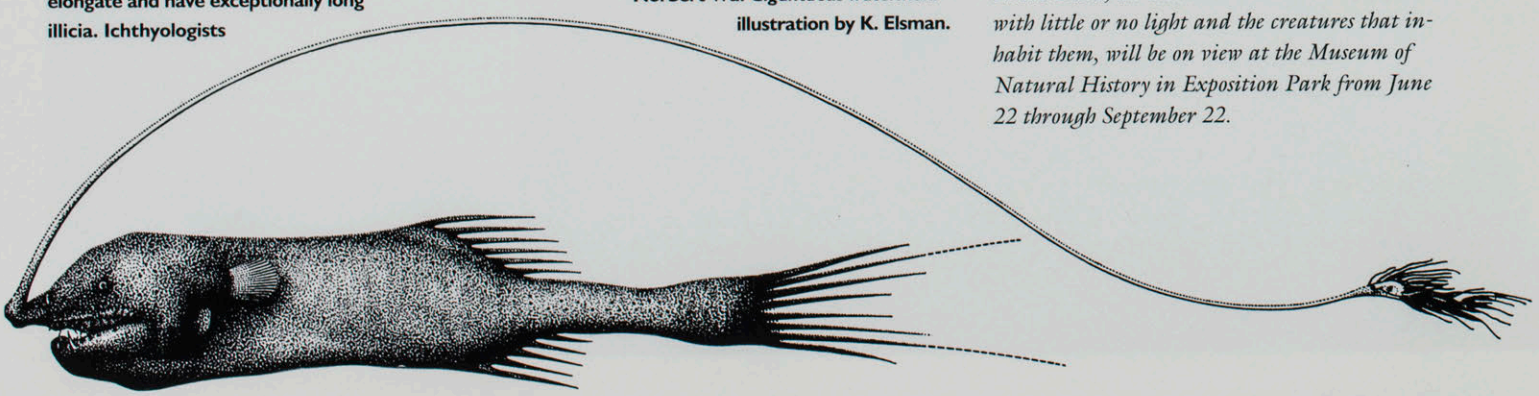
Sexually mature males of many ceratioids do not feed but instead subsist on nutrients stored during their larval stage as they search for females and spawn. Other males have a somewhat parasitic existence. In these species, the dwarf adult male attaches itself to the body of a female using hook-like projections on its chin and snout; the skin of the two fishes then fuses and their circulatory systems become connected, making the male in effect a sperm-supplying appendage of the female.

Over half the world's known ceratioid species are represented in the fish collections maintained by the Natural History Museum's Section of Vertebrates. Research based on the collections, which has resulted in descriptions of many new species, has greatly added to our knowledge and understanding of these unusual animals and is beginning to shed some light on their life in the dark.

JEFFREY A. SEIGEL
Collections Manager, Fishes

In the Dark, an exhibition on environments with little or no light and the creatures that inhabit them, will be on view at the Museum of Natural History in Exposition Park from June 22 through September 22.

Females of most anglerfish species are like *Melanocetus johnsoni (above)* in having huge mouths and bulbous bodies with relatively weakly developed fins and tail. But *Gigantactis watermani (below)* and other members of its genus are elongate and have exceptionally long illicia. Ichthyologists think that these streamlined fishes sense the presence of attracted prey through nerves in their esca and then are able to lunge toward the intended meals with quick thrusts of their powerful caudal fins. *Melanocetus johnsoni* photograph by Norbert Wu. *Gigantactis watermani* illustration by K. Elsman.



AN EXPEDITION TO THE ROBINSON CRUSOE ISLANDS

THE OBJECTIVE OF A MUSEUM research expedition is scholarly inquiry. But the complicated preparations for field work are often carried out with a sense of excited anticipation, especially when the destination is a remote South American island group.

The Robinson Crusoe Islands, also known historically as the Juan Fernandez Islands after the Spanish navigator who discovered them in 1574, lie 400 miles (650 kilometers) west of continental Chile at 33° south latitude. The islands take their popular name from the 1719 novel by Daniel Defoe, who was inspired by the adventures of Alexander Selkirk, a Scottish sailor marooned there from 1704 to 1709. Although the details in Defoe's book do not correspond with the real setting that Selkirk encountered or his true experiences, they have stimulated the interest of many tourists.

With support from the National Science Foundation, an international group of scientists traveled in January 1996 to the main island, Masatierra, to study the risk of extinction in rare plants found only in the archipelago. The contingent from the Natural History Museum consisted of Research Associate Dr. Ulf Swenson, recently graduated from Uppsala University in Sweden, and myself (this was my seventh research trip to the islands since 1980). Other participants were Dr. Daniel Crawford and Eric Tepe of Ohio State University; Dr. Gregory Anderson of the University of Connecticut; Dr. Gabriel Bernardello of the Universidad de Córdoba, Argentina; and Dr. Marcelo Baeza, Eduardo Ruiz, Pedro Aqueveque, and Hector Ibarra of the Universidad de Concepción, Chile.

Our specific objectives were to look at morphological and genetic variation in populations of selected species of plants and to relate any observed variation to reproductive traits. Ulf and I collected herbarium specimens so that we could measure shape and size of leaves, flowers, and fruits (these samples will also be sent to another collaborator, Dr. Richard Jensen of St. Mary's University, Notre Dame, Indiana, for sophisticated computer analyses of the specimens' external characteristics). Gregory and Gabriel studied the reproductive biology of each species, noting for example the number of viable seeds produced, the pollinators, and the ratios of males and females in species with unisexual individuals. (Although most plants have bisexual flowers, many species on islands have unisexual ones, perhaps as a means of avoiding the negative effects of inbreeding.)

The most innovative dimension of the expedition was our establishment of a temporary electrophoretic laboratory. Electrophoretic techniques, which allow profiling of plants' genetically based enzymes, are used to obtain estimates of the overall genetic variation within and between populations; this information will in turn allow better conservation management of the genetic resources in rare species. The lab was set up in a house in the island's only village, San Juan Bautista, and Dan and his assistants were able to analyze 815 individuals there during our stay.

The on-site laboratory gave us instant results from our fieldwork and guided our additional collecting efforts. We found that some species were very different from plants of continental areas in that they displayed almost no genetic diversity.

Masatierra Island, Robinson Crusoe Archipelago, with volcanic ridges rising behind the village of San Juan Bautista. Photograph by Dr. Tod F. Stuessy.

Collecting plant specimens along the steep ridge of Cordon Central on Masatierra Island. Photograph by Dr. Tod F. Stuessy.

These plants may be exhibiting "founder effect," by which individuals originally colonizing an island contain only a small amount of the total genetic variation found in ancestral mainland populations.

As exciting as the genetic data were, they could not match the adventures we encountered in our collecting trip to the rugged Corrales de Molina, a secluded valley on the western side of Masatierra. We were looking for members of the plant family Lactoridaceae, which has a single species, *Lactoris fernandeziana,* known only from this island. To get into the valley, we had hiked up through dense forest to over 1,600 feet (480 meters), then dropped over a basaltic knife-edged ridge down steep slopes to 1,300 feet (400 meters). The climb had been dangerous, requiring concentration at every step.

As we descended into a dense cluster of ferns, we spotted *Lactoris,* a delicate drooping shrub with small green flowers. We were elated to observe this extremely rare plant in its own home.

By this time, it was late afternoon, and we were tired, our knees weak from working cautiously on the rocky slopes. Our party of ten now needed to descend to the sea, where we had arranged to meet a small lobster fishing boat that would take us around to the village on the eastern side of the island.

We were scheduled to rendezvous with the boat at 4 p.m., but at 6 we were still scrambling down the slippery sea cliffs. The boat meanwhile had gone on to another spot to pick up four other passengers. By the time it returned to fetch us, the waves had increased to more than 15 feet (4.5 meters) and rain was falling intermittently.

There was no beach, and so the crew was to hold the boat close to the algae-covered cliffs while we each stepped down onto the lowest rocky projections in preparation for leaping out onto the prow. The maneuvers were complicated by the bob of the boat and by 6-foot (2-meter) lateral waves that occasionally crashed along the boulders upon which we were to stand.

Marcelo was the first to reveal the true danger. With his pack on, and without life vest or safety rope, he stepped down on the lowest rocks and was immediately completely inundated by a surprisingly high lateral wave; only his quick clutch at the boat's cable saved him from a serious dunking. After watching this near miss, we all removed our packs and sent them over to the boat by a taut line; in return we received life jackets one at a time. As a precaution, each person was now tied firmly to a rope held by the guides in the boat before attempting to board.

Eric was the next near casualty. Tethered and with life vest on, he stepped out onto the rocks and was instantly knocked into the sea by a frothy lateral wave. As he disappeared under the surface, we all gasped, fearing that he might be crushed between the bobbing prow and the shore. The guides responded quickly, however, pulling him by the tether to the side of the boat and forcefully hauling him in. He was soaked and badly shaken but unharmed.

The process of loading the boat continued, man by man, with great concern for each individual. Eduardo and Oscar (one of the guides) each took a dip. Ulf and I had the good fortune to jump at just the right time to land safely on the prow and be muscled in.

When we were all on board, we were 17 people in a boat with a maximum capacity of 14! We were very low in the water, and the return trip, through high, angry waves, was marked by small swampings. But frequent bailings kept us afloat.

Two hours later, we were finally back at the village, tense, wet, and exhausted. It had been a successful day but really too dangerous. The guides later told us that they had never had such a difficult boat transfer.

Would we go back? Of course. We plan to return in January 1997. We are seeking more scientific data but perhaps just a little bit less adventure.

Dr. Tod F. Stuessy
Deputy Director for Research and Collections

More information on Dr. Stuessy's study of the plants of the Robinson Crusoe Islands appears on the Natural History Museum's home page on the World Wide Web (http://www.lam.mus.ca.us/lacmnh/departments/research/botany/robcru.html).

MUSEUM ON THE MOVE

NEW DIRECTOR OF DEVELOPMENT

Stephanie Burd has joined the Natural History Museum staff as Director of Development. Burd was previously Director of Development at the Los Angeles Children's Hospital; she also served for several years as Director of Membership at the Denver Museum of Natural History.

At the Natural History Museum, Burd will manage the Development Office, including annual giving programs, the Fellows and Business Associates, corporate and foundation underwriting, and special fundraising events, including the Dinosaur Ball; she is also responsible for the museum's membership and travel programs.

STUDENT RESEARCHERS HONORED IN SCIENCE TALENT SEARCH

Two high school seniors carrying out independent research at the Natural History Museum were selected as semifinalists in the prestigious Westinghouse Science Talent Search. Lani Ren Kuramoto and Alexander Chow, both from Alhambra High School, were among 300 high school seniors from across the country honored for their interests, abilities, and promise as future scientists.

Lani Kuramoto conducts research in the laboratory of Dr. Gordon Hendler, Curator of Echinoderms. Using the museum's renowned collections of echinoderms, she is trying to determine if a widespread Pacific Coast brittle star, *Ophionereis annulata*, has two entirely different means of reproduction or is instead composed of two species that are very similar in appearance.

Alex Chow began studying polychaetes in the laboratory of Dr. Kirk Fitzhugh, Associate Curator of Polychaetes, while participating in the Museum Research Apprenticeship Program. His award-winning project on the systematic relationships among genera and families of the family Nereididae is an outgrowth of his MRAP experience.

Recipients of the Westinghouse awards are asked to name the one person who has been most influential in the development of their scientific careers: Chow named Fitzhugh, and Kuramoto named Hendler. Kuramoto is the third Westinghouse semifinalist to have been mentored by Hendler (the two other students, Lynn Tran and Lulu Wang, are MRAP alumni who have continued to conduct research in the museum's echinoderms laboratory; see TERRA, November/December 1995, page 6).

MUSEUM RESEARCH APPRENTICESHIP PROGRAM RECEIVES SUPPORT

The Education Division is pleased to announce the receipt of a grant in the amount of $10,000 from the Plum Foundation. The grant was made to the Museum Research Apprenticeship Program, which offers motivated students in the secondary schools of Los Angeles and Orange counties the unique opportunity to study natural science in a museum research setting. Museum educators and curators introduce students to aspects of scientific research that are normally unavailable from regular high school courses.

The Saturday museum program for high school students has been in existence for over 40 years, and its graduates have gone on to a variety of distinguished careers at cultural and scientific institutions around the world, including our own museum.

BEETLE DATABASES COMPLETED

Entomology Curatorial Assistant Brian P. Harris has completed an inventory of the species represented in two of the Natural History Museum's major beetle collections. This work, which involved entering all species names from each collection into a computerized database set up by Assistant Curator Dr. Brian V. Brown, allows us to more quickly and effectively answer queries about scarab beetles and longhorned beetles, two of the groups most popular with general collectors. The museum's scarab collection, which was bolstered by a recent donation from Insect Zoo Director Dr. Arthur V. Evans (see TERRA November/December 1995, pages 4-5), was found to have 3,869 species; the museum holds 1,266 species of longhorned beetles.

The South African dung beetle, *Garreta nitens*. Photograph by Dr. Arthur V. Evans.

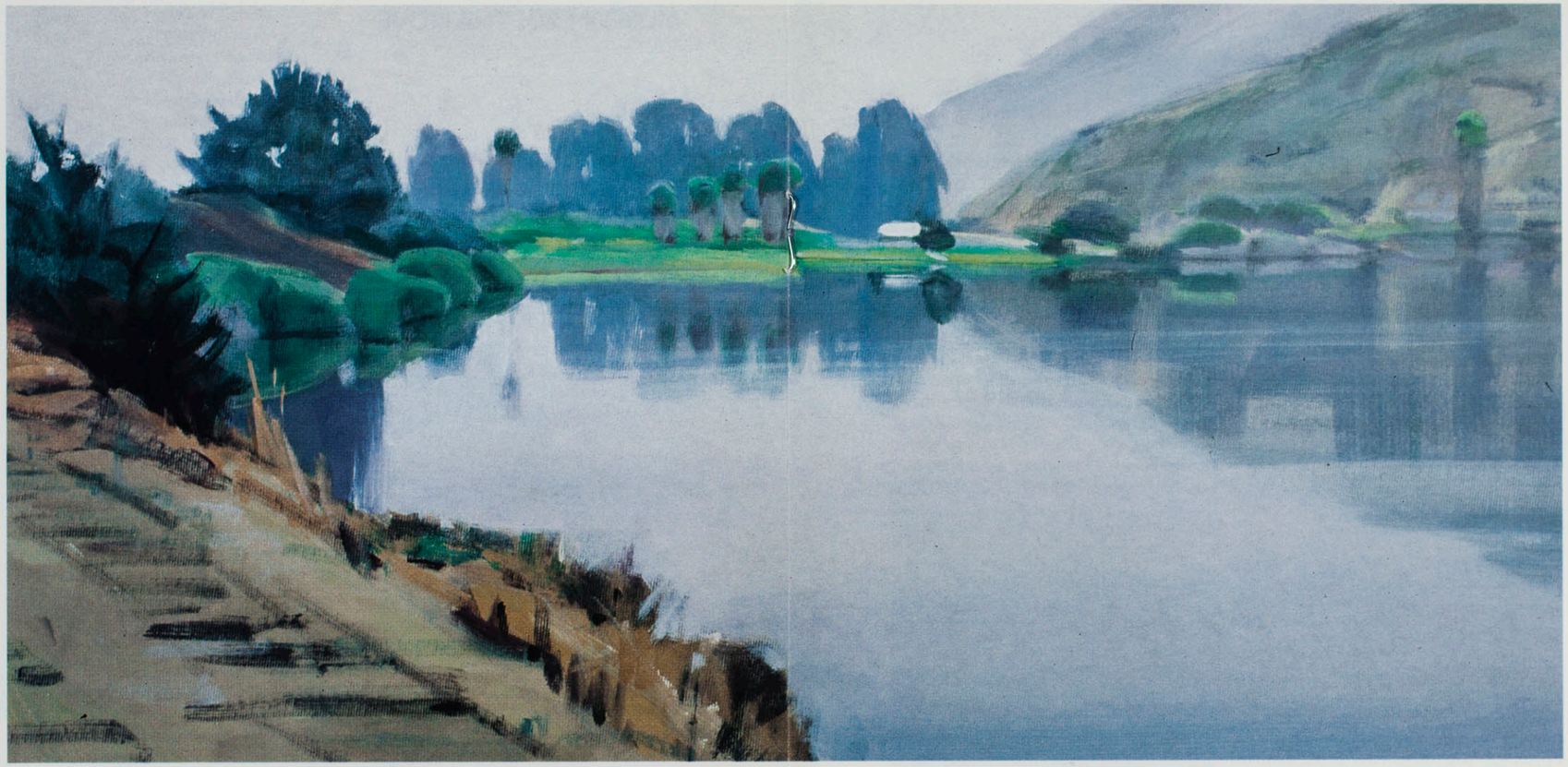
AURORA FOUNDATION DONATION

The Aurora Foundation of Taiwan has awarded a grant of $100,000 to the Natural History Museum, in support of special programming surrounding the exhibition Stones from Heaven: Ancient Chinese Jade. The grant monies were used for production of a booklet on the exhibition and made it possible for the museum to convene an international symposium in March at which archaeologists and art historians from around the world discussed recent evidence on the role of jade in the development of Chinese culture.

PLANNED GIVING PROGRAM

At their December 1995 meeting, the Development Committee of the Board of Trustees approved the creation of the Smilodon Society at the Natural History Museum. This group has been formed to give recognition to those individuals who have made gift provisions in their wills or

(continued on page 14)



CALIFORNIA WETLANDS

An Exhibition from the California Art Club

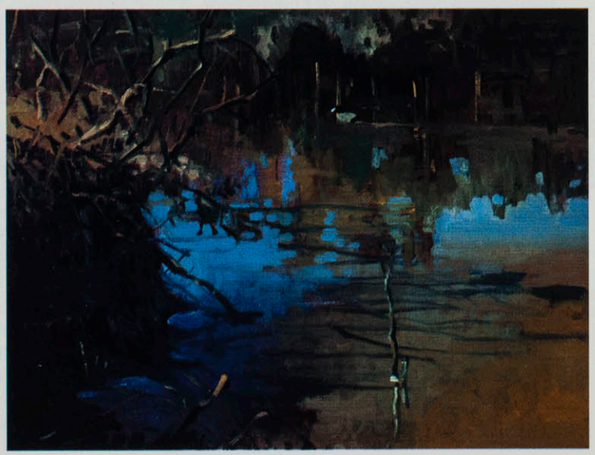
A growing recognition of the ecological importance of wetlands, which have a productivity approaching that of tropical rainforests, has brought some success to efforts to preserve those remaining in the United States. To stimulate public interest in the value of these wilderness areas, artists from the California Art Club have organized an exhibition of wetland paintings, on display at the Natural History Museum in Exposition Park through September 1.

Wetlands, including marshes, swamps, bogs, prairie potholes, sloughs, floodplains, and estuaries, are found in every region and climate zone of the U.S. In addition to providing feeding, breeding, and nursery grounds for a great number of fishes, amphibians, crustaceans, and birds, these places lock up large amounts of carbon—especially in the form of peat—and thereby prevent it from entering the atmosphere as carbon dioxide, the principal culprit in global warming.

Wetlands absorb and filter pollutants that would otherwise degrade lakes, rivers, reservoirs, and aquifers. Coastal marshlands and tidal flats buffer the impact of storm tides on populated uplands; inland riverine bottomlands and deltas sponge up runoff, reducing flood crests downstream. Wetlands stabilize shorelines and riverbanks—they are the glue that binds the land together.

Since the mid-nineteenth century, when the Swamp Land Acts were passed to encourage transformation of what was then termed "wasteland" into agricultural use, the conversion of wetlands into croplands has been the leading cause of their depletion in the U.S. Despite new programs and regulations instituted since the 1970s to save what remains of this vital national resource, we are still appropriating wetlands for other purposes at an estimated rate of 800 acres per day.* The problem is particularly acute in California, which has lost all but 9 percent of its once extensive wetlands, primarily to residential and commercial development and related water delivery and flood control projects.

For the museum's current exhibition, a select group of artists from the California Art Club has provided more than 30 works of art dramatizing the stark beauty of our state's wetlands. The club, which was founded in 1909 by early California impressionists and sculptors, exhibited twice a year at the Los Angeles County Museum from 1913 to 1938. Although the Great Depression, the Second World War, and the advent of modern art led to a general decline of the club, it has recently experienced a tremendous resurgence, in part because of a renewed interest in the California plein-air school of painting. With 250 professional artists and more than 500 supporting nonartist members, the club is now considered one of the most vital professional art organizations in the country.



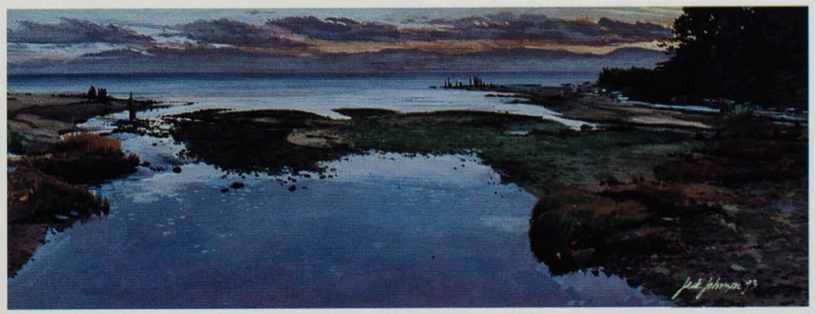
After a 58-year hiatus, the California Art Club is proud to once again exhibit at the Exposition Park museum.

Elaine Adams
Publicity Chair and Newsletter Editor
California Art Club

Above
***Catalina Wetlands,* by Marcia Burtt. Acrylic on canvas, 20 by 36 inches (51 by 91 centimeters). Collection of the artist.**

Opposite
***Yules Lake with Mud Hen,* by Meredith Brooks Abbott. Oil on canvas, 11 by 14 inches (28 by 36 centimeters). Collection of the artist.**

Below
***Half Moon Bay,* by Jack Johnson. Gouache on canvas, 10 by 24 inches (25 by 60 centimeters). Collection of the artist.**



*"Our Disappearing Wetlands," by John G. Mitchell. *National Georgraphic,* October 1992.

Opening and Continuing Exhibitions

■ **Stones from Heaven: Ancient Chinese Jade,** through May 12, Dart Gallery, Museum of Natural History, Exposition Park. This exhibition of several hundred jade pieces, from two of the world's foremost private collections, includes ritual objects from the late Neolithic era (4000 to 2500 B.C.) as well as a complete 2,000-year-old burial suit.

■ **Wild Silk Moths: Photographs by Kirby Wolfe,** through June 30, Ground Floor Hall Galleries, Museum of Natural History, Exposition Park. A series of stunning, full-color photographs of silk moths highlights some of the most beautiful and grotesque of the night-flying creatures.

■ **In the Dark,** June 22 through September 22, Dart Gallery, Museum of Natural History, Exposition Park. Interactive elements and life-size dioramas are used to introduce visitors to the world's darkest environments, including ecosystems below the ground, inside caverns, and deep in the sea, and to explore the ways in which animals, plants, and people have adapted to habitats that have little or no light.

■ **State of the Art, 1905-1910,** through 1996, Second Floor Galleries, Petersen Automotive Museum. This exhibition of more than twenty automobiles, including a 1908 Pierce Great Arrow and a 1906 Black Stanhope from the Natural History Museum's collections, offers a glimpse into the period of transition from "horseless carriage" to modern motorcar.

■ **Harley Legends,** through 1996, Third Floor Galleries, Petersen Automotive Museum. A rare collection of vintage, new, and custom Harleys on loan from collectors around the world chronicles the 90-year history of the Harley-Davidson Motor Company, the sole remaining U.S. motorcycle manufacturer.

PROGRAMS FOR MEMBERS AND VISITORS

LECTURES & SPECIAL EVENTS

■ LIONS & TIGERS & BOOKS, OH MY!

A Summer Celebration of Reading

Saturday, June 1, noon to 4 p.m., Museum of Natural History, Exposition Park

Come see the stuff that books are made of! Enjoy readings by renowned children's authors and celebrities in the museum galleries, watch illustrators capture the magic of our dinosaurs and other animals, and find out about the newest children's books for adventurous summer reading. This fun-filled day will also include storytelling; demonstrations of papermaking, calligraphy, and bookbinding; a reading resource fair; a free theatre performance; and children's craft activities in the Discovery Center. Bring a children's book and get in free! Books will be donated to the Exposition Park Library and the USC Family of Five Schools.

■ CHAMBER MUSIC SERIES

Saturday, May 4 or **Saturday, June 1,** 7:30 p.m., William S. Hart Museum, Newhall

Join us for an evening of chamber music at the beautiful William S. Hart Museum. Concerts feature the outstanding **Santa Clarita Chamber Players** and are held in the intimate atmosphere of the living room of the Hart mansion; refreshments follow the performances. $30 per person, $50 per couple, members; $35 per person, $60 per couple, nonmembers. Please call 805/254-4584 for reservations.

■ TENTH ANNUAL INSECT FAIR

Saturday and Sunday, May 18 and 19, 9 a.m. to 4 p.m., Los Angeles County Arboretum, Arcadia

The Insect Fair is the largest event of its kind in North America, with up to 50 exhibitors from all over the United States and Europe participating. There will be exhibits of living and preserved insects, demonstrations on how to make an insect collection, and displays about controlling household and garden pests. Insect specimens, natural history books, and arts and crafts will also be sold and exchanged.

The Insect Fair is sponsored by the Ralph M. Parsons Insect Zoo and the Sonoran Arthropod Studies Institute in Tucson. Free with Arboretum admission. For more information contact Dr. Art Evans, Insect Zoo Director at 213/744-3558 or at aevans@bcf.usc.edu.

■ FIFTH ANNUAL ANIMAL FAIR

Sunday, May 19, 10 a.m. to 4 p.m., William S. Hart Park, Newhall

Come to Hart Park for a day of family fun! Enjoy the petting zoo, animal acts, educational exhibits, and entertainment. And take a free tour of historic Hart Museum. Admission and parking are free, and fees for food and activities are small (the proceeds benefit the barnyard animals at Hart Park).

ADULT LECTURES

■ INSIDE A PHAROAH'S TOMB

The Sons of Ramesses the Great

Sunday, June 30, 2 p.m., Jean Delacour Auditorium, Museum of Natural History, Exposition Park

Join **Dr. Kent Weeks,** world-renowned Epytologist and rediscoverer of the tomb of the sons of Ramesses II, in an exploration of Ancient Egypt, one of mankind's most remarkable cultures. Dr. Weeks, an American who has lived and worked in Egypt for nearly 30 years, announced last summer that his team had uncovered one of the most remarkable archaeological finds in modern times—KV5, a tomb located in the infamous Valley of the Kings. Dr. Weeks will present his current research on this magnificent site, shedding light on the human dimension of his recent discovery and offering a glimpse at the mysteries that remain. $7 members, $9 nonmembers, $5 students with I.D.

Lecture and Booksigning

■ THE SONG OF THE DODO

Island Biogeography in an Age of Extinctions

Saturday, May 4, 2 p.m., Jean Delacour Auditorium, Museum of Natural History, Exposition Park

Giant lizards, flightless pigeons, pygmy elephants, flesh-eating parrots—these bizarre creatures and others of their ilk suggest that something is different about life on islands. In Charles Darwin's time, island biogeography was the science that opened Victorian minds to the wonders of evolution. In our own era, with wild landscapes being chopped into island-like fragments, it is the science of jeopardy and extinction. David Quammen, a former Rhodes scholar and two-time National Magazine Award recipient, gives us both sides of the story in this lecture that illustrates his latest work, *The Song of the Dodo* (Scribner, April 1996), which was excerpted in the March 1996 issue of *Discover.* $7 members, $9 nonmembers, $5 students with I.D.

Symposium

■ ANCIENT EGYPT

The Earliest Mysteries

Saturday, July 20, 9 a.m. to 4:30 p.m., Jean Delacour Auditorium, Museum of Natural History, Exposition Park

Ancient Egypt was not always a place of pyramids and kings. Join us for an exploration of Egypt's predynastic era—the cultures that preceded the Old Kingdom and can be traced to 3000 B.C. and before. These earliest of Egyptian civilizations, whose development was influenced by the Nile River, set patterns of culture that culminated in the Ancient Egyptian state known for its grandeur and mystery.

Dr. Fekri Hassan, Professor of Egyptology at University College, London, and Petrie Chair of Egyptology, has uncovered some of the earliest Egyptian cemeteries ever discovered and has based his extensive descriptions of predynastic communities on explorations of these grave sites and examination of their accompanying goods.

Dr. Antonio Loprieno, Professor of Egyptology at UCLA and Chairman of the Department of Near Eastern Languages and Cultures, will discuss the emergence of religion in the predynastic period and its subsequent development, touching on the significance of early records, including the *Pyramid Texts.*

Cosponsored by the American Research Center in Egypt, Los Angeles Chapter. $40 members, $50 nonmembers, $25 students with I.D.

ADULT CLASSES & WORKSHOPS

■ PALM STALK BASKETRY

Sunday, May 5, 10 a.m. to 5 p.m., George C. Page Museum, Hancock Park

Balmy southern California has an abundance of palm trees. In this class, you'll learn to recycle the dead, flowering stems from these trees and use them to coil a functional and beautiful basket or tray. Your instructor is master basket maker **Judy Mulford**. $55 members, $65 nonmembers.

■ SURFING THE WEB

Thursday, May 16, or **Thursday, June 6,** 6:30 to 8:30 p.m., Education Division Classroom, Museum of Natural History, Exposition Park

The Natural History Museum is on the Internet! Join us for a workshop designed to familiarize our members with this exciting resource and with the museum's World Wide Web site. **Jim Angus** and **Bill Mertz,** computer specialists for the museum, will provide useful tips on a variety of topics, including getting on line, using e-mail, and exploring the Web. Classes are geared toward the Internet "newbie" (beginner) and will provide enough information to encourage even the most timid novices to grab their keys and join the museum on the Information Superhighway.

Sessions are for members only, and space is limited; $10.

ADULT FIELD TRIPS

■ THE UPS AND DOWNS OF LOS ANGELES

Sunday, June 2, 9 to 11 a.m.

Larry Gordon, coauthor of *Stairway Walks in Los Angeles* (Wilderness Press, 1990), leads our trek through beautiful Silverlake. Along the way, we'll view hillside homes and the brilliant blue Silverlake Reservoir while learning bits of urban history and Hollywood folklore. Most of the trip is an easy walk, but some stairways are steep and long. Wear comfortable walking shoes. $15 members, $20 nonmembers.

■ THE AMERICAN BUNGALOW

Saturday, June 8, 10 a.m. to 4 p.m.

Join world-renowned architectural historian **Professor Robert Winter** on a fascinating tour in and around the breathtaking bungalow-style homes of Altadena, South Pasadena, and Pasadena. We'll ride through "Bungalow Heaven" and tour the interiors of several of these historic homes. Dr. Winter, author of *The California Bungalow* (Hennessey and Ingalls, 1980) and *American Bungalow Style* (Simon & Schuster, May 1996), will lead us through his own home—a nationally registered historic bungalow and a landmark for the City of Pasadena. Transportation is by chartered motor bus. Bring a lunch and blanket for our mid-day picnic on the grounds of the Pasadena Historical Museum. $45 members, $55 nonmembers.

■ IMAGES ETCHED IN TIME

Sunday, June 16, 8 a.m. to 5 p.m.

Visit one of the largest and best preserved concentrations of rock art in the Western Hemisphere. Join museum educator and rock art enthusiast **Nancy Fox** on a special trip to view these spectacular images from another era. Created by early hunters and gatherers of the California high desert, these petroglyphs give us a glimpse into a lost way of life. Because they are located on the grounds of China Lake Naval Air Weapons Station, access is allowed only through specially scheduled trips.

Our tour begins with an orientation film at the Maturango Museum in Ridgecrest; from there, we will carpool to the site, since automobile access is restricted. Participants provide their own transportation to Ridgecrest; information concerning accommodations will be sent upon registration. Group size is limited, and reservations must be received by May 25. $40 members, $50 nonmembers.

Porch of an airplane bungalow in Altadena, California *(right)*, and green dog tile from Motawi Tileworks of Ann Arbor, Michigan. Photographs copyright Alexander Vertikoff; from *American Bungalow Style*, courtesy Simon & Schuster.

■ OWLS, BATS, AND BUGS

Saturday, July 13, 6 to 10 p.m.

Nightfall brings out many animals rarely seen by daytime observers: owls, bats, insects, and other nocturnal creatures emerge from their hideouts to hunt for a meal or a mate. The Santa Monica Mountains make a perfect setting for an evening of observation and study of southern California's nighttime wildlife.

With museum ornithologist **Kimball Garrett,** we'll learn to recognize owl calls and attempt to lure these nocturnal birds out from their nighttime lookouts. We'll set mist nets to capture a few of the dozen bat species that frequent the area and take a closer look at these winged mammals. Entomologist **Dr. Art Evans,** Director of the Insect Zoo, will entrap nocturnal insects for our inspection.

Bring a picnic dinner; we'll meet at the site. $45 members, $55 nonmembers.

■ SAILING THE ARCHIPELAGO

The Queen Charlotte Islands of British Columbia

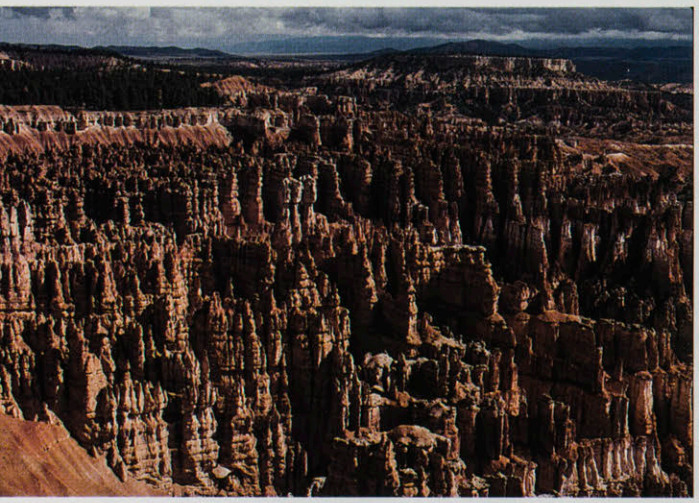
August 9 to 16

The Queen Charlotte Islands are considered one of the richest biological and cultural areas in North America. Aboard our 68-foot sailboat, *Island Roamer,* we will ex-

plore these islands, which are difficult to reach and rarely visited but resplendent with old-growth forests of spruce, hemlock, and cedar underlain with carpets of mosses and berry bushes. Killer whales, the fast-swimming Dall's porpoises, Bald Eagles, puffins, black bears, and river otters are among the native wild animals we may see on the cruise.

The islands are home to the culturally rich Haida Indians. With Haida guides, we will visit abandoned villages containing the remains of the great log houses and some of the best original native totem poles to be found in the world.

Lodgings are private cabins accommodating two persons each. $1,900 members, $1,945 nonmembers, airfare not included; deposit of $250 required. For further information, please call Sue Lafferty, 213/744-6912.



Bryce Canyon. Photograph by Jim Guenther.

■ CHANGING COLORS OF FALL IN THE SOUTHWEST

September 28 to October 12

Join us on an autumn odyssey through America's Southwest. This 2-week motor coach tour covers six spectacular national parks and a variety of national monuments and points of interest, including the perpendicular landscape of Zion; the rock spires of Bryce Canyon; the cliff dwellings of Mesa Verde; the dazzling vistas, pinnacles, and amphitheaters of Canyonlands and Arches; and the immense beauty of the Grand Canyon. We'll hike park trails, view autumn colors from a narrow-gauge train between Silverton and Durango, Colorado, and learn about the indigenous peoples and the geology, botany, and wildlife of this unique canyon country.

Our trip leaders, **Jim and Sharon Guenther,** are the dynamic owners of Wind River Field Seminars. They have led trips from the Arctic to Mexico for such organizations as the National Audubon Society, the Smithsonian Institution, and the Teton Science School, sharing their knowledge of the natural history of the great mountain ranges with fellow travelers and explorers.

$2,350 members; $2,450 nonmembers. Cosponsored with the San Diego Natural History Museum.

CHILDREN'S CLASSES & WORKSHOPS

■ CHILDREN'S CONCERTS IN HISTORIC PLACES

Saturday, May 11, 1:30 and 3 p.m., Petersen Automotive Museum

From memory lane to the fast lane—a celebration of classical music and classic cars, of racing and musical virtuosity, and of travel ancient and new. Explore over 200 vehicles on display in the world's most innovative automotive museum. $43 per family (includes two adult and two children). Cosponsored with Mount St. Mary's College; please call 310/440-1351 to register.

■ ADVENTURES IN NATURE

July 15 to 19, July 22 to 26, or **July 29 to August 2,** Museum of Natural History, Exposition Park

Children from 3 to 13 years of age learn about nature firsthand in exciting participatory sessions with outstanding museum instructors. The week-long courses, which may be taken mornings or afternoons, offer opportunities to visit the curatorial laboratories, work with natural history specimens, and make craft items to take home. While children are in class, adults may enjoy free museum programs.

Classes, which are limited to 20 students each, run Monday through Friday, mornings (10 a.m. to noon) or afternoons (1 to 3 p.m.). Children who are enrolled in both morning and afternoon classes will be supervised over the lunch break. Program costs are $70 per week-long class for members, $80 per week-long class for nonmembers. Members receive additional discounts when enrolling two or more siblings.

FAMILY FUNDAYS!

These hands-on family programs are **free** with museum admission for children ages 4 and older. They are held in the Discovery Center of the Museum of Natural History in Exposition Park. No reservations are necessary, but space in some programs is limited, so please arrive early.

MUNDO DE ANGELES
A World of Angels

Saturday, May 4, 1:30 p.m.

Celebrated throughout the world, angels come in all sizes and colors. With artist **Consuelo Norte**, make your own colorful "toothpick angel" using traditional Mexican techniques.

CAMOUFLAGE COLLAGE

Saturday, June 8, 1:30 p.m.

Skunks and zebras both have stripes, but what do they use them for? Join Museum Educator **Gretchen Markle** to find out about camouflage in nature; then craft your own habitat collage to take home.

An Adventures in Nature brochure was sent to all members at the family level and above at the beginning of April. If you need additional information or if you are interested in sponsoring a child from an economically challenged family, please call 213/744-3534.

FAMILY PROGRAMS

■ FAMILY CAMPING AT LEO CARRILLO STATE BEACH

Friday through Sunday, June 14 to 16. Open to families with children of all ages

Treat Dad to a relaxing and "catered" Father's Day weekend at beautiful Leo Carrillo State Beach, just over the Ventura county line from Los Angeles. We'll explore the beach and the tidepools, hike in the Santa Monica Mountains, gaze at the stars, and roast marshmallows around the evening campfire. Trip leaders **Dave Wyman** and **Kathy Burke** will prepare a deluxe breakfast both mornings as well as lunch and dinner on Saturday.

Arrive anytime after 3 p.m. on Friday. Participants provide their own camping gear and dinner Friday night; we'll take care of the rest. $85 adult and $65 children under 16, members; $95 adult and $75 children under 16, nonmembers. Cosponsored with the San Diego Natural History Museum.

■ IN THE DARK

A Night Hike

Saturday, August 3, 7 to 10 p.m. Children ages 8 and older accompanied by an adult

Explore the Santa Monica Mountains at night with one of our favorite naturalists, **Peter Rice.** Witness a glow show, hear stories about the night sky, and develop night vision as we search for the nocturnal creatures that call this area home. We'll also sample mountain plant seeds, roots, and flowers from our instructor's snack bag.

Wear sturdy shoes for an easy 1-mile hike. Participants meet at the site in Thousand Oaks. $20 members, $25 nonmembers.

ANNOUCEMENTS

■ VOLUNTEER OPPORTUNITIES ABOUND

The museums that make up the Natural History Museum of Los Angeles County offer a wide variety of volunteer opportunities. Prospective volunteers can be trained to be docents, curatorial helpers, service council members, or to work in outreach programs. If you are fascinated by the world of history or the natural sciences, the Natural History Museum family welcomes you. Please call Isabel Rosenbaum at 213/744-3341 for further information.

■ TAKE A TOUR

Add to your enjoyment of the Exposition Park museum. Tours of the museum are offered daily at 1 p.m. by museum docents; topics vary. All tours start at the North Entrance outside of the Ethnic Arts Shop; they are free with museum admission.

PUBLIC PROGRAMS RESERVATION FORM

■ **By telephone:** Use your MasterCard or VISA. Call the Education Division at 213/744-3534, weekdays, 8 a.m. to 4 p.m. Credit cards are accepted only with a minimum charge of $20.

■ **By mail:** Complete the form below, fill in the charge information or enclose a check payable to Museum Foundation, and return your order form and payment with a self-addressed, stamped envelope. The form may be duplicated. Mail to: ***Education Division, Natural History Museum, 900 Exposition Boulevard, Los Angeles, CA 90007***

■ **Important: Reservation, Waiting List and Refund Policies.** Preregistration is required for all classes, workshops, and field trips and is recommended for all other Education Division programs. Tickets to auditorium events may be purchased at the door; seating is not reserved. Reservations are not necessary for Family Fundays.

Applicants for filled programs will be placed on a waiting list and contacted if vacancies or rescheduling occur. If you have paid for a filled program, your payment will be refunded in 4-6 weeks.

Cancellations must be made one week prior to the first day of the event for the registrant to be eligible for a refund. Only if we are able to fill your space will the fee be refunded.

Dates and times of programs are subject to change, and class sizes are limited. Please call 213/744-3534 weekdays between 8 a.m. and 4 p.m. to verify program dates, times, and availability.

Mr.
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Mail to:
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Natural History Museum
900 Exposition Blvd.
Los Angeles, CA 90007

❑ My check is enclosed

Charge my credit card:
❑ MasterCard
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Program	Number of participants	Price	Total Price

Total Remittance _____

Credit Card # _____ Expiration Date _____

Signature _____

Please list children's names, ages, and programs in which they are enrolling:

_____

_____

_____

_____

MUSEUM ON THE MOVE
CONTINUED

(continued from page 7)

created a planned gift that will benefit the museum.

Members of the Smilodon Society will receive special recognition in TERRA and in future annual reports and will be listed permanently on a plaque at the Exposition Park museum. If you are among those thoughtful individuals who have completed estate planning that includes the Natural History Museum, or if you would like to receive information about such arrangements and the tax benefits they allow, please contact Richard R. Larkin, Vice President for Development, at 213/744-3307.

MEMBERSHIP

THANK YOU!

The Natural History Museum is grateful to its members who have generously provided additional support for the museum's programs through year-end gifts to the Annual Fund. We are pleased to acknowledge the following members who gave $100 or more between November 15, 1995 and February 4, 1996.

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PRECIOUS STONES HIGHLIGHT DINOSAUR BALL

The Natural History Museum's fourteenth annual Dinosaur Ball, held March 2 in the Exposition Park museum, glittered with precious stones from East and West. The premiere fund-raising event celebrated the opening of the exhibition, Stones from Heaven: Ancient Chinese Jade, which featured an extraordinary array of more than 500 hand-carved jade artifacts dating from 4000 B.C. to the time of the Han Dynasty. Guests at the ball were also able to view three magnificent diamond jewelry pieces on loan from the Smithsonian Institution for the one night only and to see a demonstration of the jade-working artistry of Master Carver Hing Wa Lee.

Generous underwriting for the gala was provided by Amgen, George C. Page, Farmers Insurance Group, Korn/Ferry International, and Majestic Realty. In all, the ball raised approximately $200,000 for the museum's educational outreach and public programs, which serve more than 750,000 children and adults each year.

Viewing a 2,000-year-old burial suit are *(from left)* Mr. and Mrs. Wu T'ang-hai, lenders to the exhibition Stones from Heaven: Ancient Chinese Jade, and representatives of the Aurora Foundation of Taiwan, which underwrote special programming associated with the exhibition; Dr. Li Chia-Wei, Director of the National Museum of Natural Science in Taichung City, Taiwan, which organized the exhibition with the Natural History Museum; Dr. Adam T. Kessler, who with Dr. Anthony R. Kampf curated the exhibition; and Dr. Paola Dematté, assistant curator for the exhibition.

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Museum President and Director Dr. James L. Powell *(right)* with Patricia Lombard, Cochair of the 1996 Dinosaur Ball, and George C. Page, founder of the Page Museum of La Brea Discoveries.

Kevin W. Sharer, Cochair of the 1996 Dinosaur Ball, and his wife, Carol, with the diadem of Empress Marie-Louise, wife of Napoleon I.

NEW MEMBERSHIP OFFICE

The Membership Office has moved its headquarters to a suite off the Lando Hall of California History, on the Ground Floor of the Exposition Park museum building. The new space includes a service desk, where members may come to obtain information on museum programs, purchase and personalize gift memberships, obtain replacement membership cards, or renew their own memberships. Members visiting the office will be assisted by Nicole Berrin, who recently joined the staff as Membership and Development Assistant.

Office hours are Monday through Friday, from 9 a.m. to 5 p.m. The Membership staff may also be reached by calling 213/744-3426 (FAX: 213/749-3583).

JOIN THE MEMBERSHIP TEAM

Volunteering offers the opportunity to learn, to use your talents, to make new friends, and to contribute to the vital work of the Natural History Museum. The Membership Office is seeking motivated, enthusiastic people to share their excitement about our museum with visitors. Volunteer opportunities include staffing the membership and information desks at the Exposition Park or Page museums, answering telephone queries, and assisting at special events.

If you would like to join the volunteer membership team, please call Seana McAniff, Membership Coordinator, at 213/744-3426.

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As of February 29, 1996

The Natural History Museum exists to advance knowledge and to enable people of all ages, backgrounds, and interests to understand and appreciate their natural and cultural heritage. The museum assembles, conserves, interprets, and holds in trust collections of irreplaceable objects from nature and human history. These collections reveal the history of the Earth and the evolution and diversity of life and culture. They sustain programs of research, exhibits, education, and publication.

The **Museum of Natural History,** Exposition Park, is located at 900 Exposition Boulevard, Los Angeles 90007. The **George C. Page Museum of La Brea Discoveries** is located at 5801 Wilshire Boulevard, Los Angeles 90036. The **Petersen Automotive Museum** is located at 6060 Wilshire Boulevard, at Fairfax Avenue, Los Angeles 90036.

For recorded information on museum hours, admission fees for the general public, and days when no admission is charged, please call:

■ Exposition Park Museum	213/744-DINO
■ Page Museum	213/936-2230
■ Petersen Museum	213/930-CARS

Admission to these museums is always free to members.

The **William S. Hart Museum** is located at 24151 San Fernando Road, Hart Park, Newhall 91321. Admission is free. For information on museum hours, please call:

■ Hart Museum	805/254-4584

The Natural History Museum can be reached on the World Wide Web at http://www.lam.mus.ca.us/lacmnh

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Natural History Museum of Los Angeles County
Exposition Park, Los Angeles, California 90007

The Travel Program of the Natural History Museum of Los Angeles County is

YOUR VIEW TO THE WORLD

MAINE **July 11 to 17, 1996**
Maine—remote, rural, and beautiful—is defined by a coastline that stretches 3,500 miles and encompasses 500 islands. Local naturalists and guides will lead us on visits to the Rachel Carson Wildlife Refuge, Monhegan Island, and seafaring towns like Camden and Searsport, Bar Harbor and Acadia National Park. We'll also spend three fabulous nights aboard the windjammer *Schooner Mercantile.*
■ $1,695 plus airfare

INDONESIA **July 19 to August 3, 1996**
From the artisan center of Ubud in Bali, enjoy guided bird walks and temple visits. Sail to Komodo Island by private boat, visiting the famous dragons and snorkeling in the crystal clear waters. Tour Tanjung National Park on Borneo, traveling by boat along the Sekonyer River and stopping at Camp Leakey, an orangutan rehabilitation station established by primatologist Biruté Galdikas. On Java, tour Borobudur Temple, one of the wonders of the world.
■ $3,795 including airfare

KENYA **October 15 to 27, 1996**
Explore the heart of East Africa on this luxury photographic safari.In Samburu National Park, stay at Sweetwaters Tented Camp on the banks of the Uaso Nyiro River, home to herds of elephant, giraffe, buffalo, oryx, zebra, and leopard. Tour the Great Rift Valley and the acacia-dotted grasslands of the Masai Mara. A Tanzania extension is optional.
■ $4,395 including airfare

EGYPT **October 29 to November 14, 1996**
Join us for an encore presentation of our sold-out February tour with Dr. Kent Weeks. Our itinerary includes an exclusive charter cruise on the Nile and visits to Memphis, Karnak, the pyramids at Giza, the Egyptian Museum in Cairo, the Valley of the Kings, and the temples near Aswan and Abu Simbel as well as explorations of recently opened tombs not accessible to the general public. Dr. Weeks will lecture at the Museum of Natural History in Exposition Park on Sunday, June 30 (see page 10 for details).
■ $5,275 including airfare from New York

BELIZE **November 15 to 28, 1996**
St. George's Caye, a small tropical island, will be your base of operations for this trip, designed with snorkeling in mind. The 195-mile-long Belize barrier reef boasts over 220 types of fish, as well as hundreds of invertebrate species. Our tour also includes visits to the Turneffe Islands, Ambergris Caye, Hol Chan Marine Reserve, Sergeant's and Water Cayes, and the fantastic Maya site of Lamanai.
■ $2,598 including airfare

Photograph of Belize courtesy of International Expeditions

FOR MORE INFORMATION
please contact Karen Hovanitz
Museum Travel Program (213) 744-3350.